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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

In the Matter of

Replacement of Part 90 by Part 88  
to Revise the Private Land Mobile  
Radio Services and Modify the  
Policies Governing Them

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PR Docket No. 92-235

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To: The Commission

PETITION FOR RECONSIDERATION

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Uniden America Corporation  
Maxon America, Inc.

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## SUMMARY

Kenwood Communications Corporation; Uniden America Corporation; and Maxon America, Inc., (the "Joint Parties"), request that the Commission reconsider and reverse portions of its Report and Order, FCC 95-255, 60 Fed. Reg. 37152 et seq., released June 23, 1995 in this proceeding. Specifically, the Joint Parties, each a major manufacturer of land mobile transceivers and communications equipment, request that the Commission revisit the timetable of its transition plan for implementation of narrowband technologies in the private land mobile radio (PLMR) services, adopted in the Report and Order.

The Commission has embarked by the Report and Order on a proper track to implement narrowband channelization and increase spectrum efficiency in the PLMR bands. It has, however, accelerated the pace of that track to the point that the plan is unworkable, from the point of view of those who are to bear the burden of implementing the narrowband technologies. The Commission has provided but one year to sunset type acceptance of all but 12.5 kHz systems. As other manufacturers and user groups have noted, there must be time to design, develop, secure parts, manufacture, type accept and bring to the marketplace true 12.5 kHz systems. The alternative is to seriously disrupt the existing, heavily-loaded PLMR bands, including the public safety bands. To insure a graceful transition, the first necessary modification of the Report and Order is to provide a three-year type acceptance limitation for equipment greater than 12.5 kHz, so as to allow true 12.5 kHz equipment to actually reach the marketplace.

Second, and more importantly, the 12.5 kHz equipment should be permitted to be type accepted during at least one generation of the systems, which have a practical life span of between 15-20 years. The Commission has, by the Report and Order, imposed a sunset for type acceptance only nine years from the present time: far too short a period to abandon entire technologies and develop new standards, design, acquire parts, manufacture, and type accept entirely new, unproven technology. The timetable for the type acceptance sunset for 12.5 kHz equipment was arbitrarily established, and fails to account for the previously adopted plan, dating back to 1987, to permit the use of the 220-222 MHz band for the development of standards and systems for VNB equipment. It should not be January 1, 2005, but closer to 2014, in order for the VNB technology to stabilize, for standards to be established, and for competitive products to be brought to the market by equipment manufacturers. Such a timetable will insure competition in equipment availability, the interoperability that is so critical to the public safety radio services, and reasonable pricing. It will also insure a "graceful" transition from 12.5 kHz channels to 7.5 and 6.25 kHz channels.

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To: The Commission

**PETITION FOR RECONSIDERATION**

Kenwood Communications Corporation ("Kenwood"); Uniden America Corporation (Uniden); and Maxon America, Inc. (Maxon), jointly referred to herein as the "Joint Parties", by counsel and pursuant to Section 1.429 of the Commission's Rules (47 C.F.R. §1.429), hereby respectfully request that the Commission reconsider and reverse portions of its Report and Order, FCC 95-255, 60 Fed. Reg. 37152 et seq., released June 23, 1995 in the captioned proceeding. Specifically, the Joint Parties, each a major manufacturer of land mobile transceivers and communications equipment, respectfully request that the Commission revisit the timetable of its transition plan for implementation of narrowband technologies in the private land mobile radio (PLMR) services, which was adopted in the Report and Order. As good cause for their petition, the Joint Parties state as follows:

## I. Introduction

1. The Joint Parties have previously indicated their support the Commission's intention in this proceeding, and suggest that the Commission has, overall, developed a reasonable conceptual plan for the phasing-in of a mandatory transition to new, more efficient technologies in the PLMR services. The conversion plan, however, is significantly at variance from that contained in the Notice of Proposed Rule Making in this proceeding (the Notice),<sup>1</sup> which envisioned timetables for user conversion to narrowband channelization. Inasmuch as the burden of leading the transition to narrowband channelization and conversion to more efficient technology under the Report and Order falls squarely on the manufacturers, rather than the user community, the concern of the Joint Parties is that the timetable for conversion, first to 12.5 kHz equipment, and second to equipment to accommodate 7.5 kHz (VHF) and 6.25 kHz (UHF) channels must be reasonable, and sufficient to accommodate product design and manufacturing development timelines. It is submitted that the conversion timetables under which newly type-accepted equipment must meet the narrowband standards are overly short and fail to account for normal product development cycles.

2. Furthermore, with respect to the 7.5/6.25 kHz channel conversion, the status of current technology does not support rigorous adherence to the type acceptance timetable in the Report and Order. Finally, strict adherence to the 7.5/6.25 kHz conversion

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<sup>1</sup> 7 FCC Rcd. 8105 (1992).

timeline jeopardizes seriously the two-step channel reduction process, and renders obsolete before its acceptance in the marketplace any product line that is based on 12.5 kHz channelization. The advanced timetable for the implementation of 7.5/6.25 kHz channels is self-defeating, in that it virtually insures that no user will convert from 25 kHz to 12.5 kHz equipment. In short, the timetables must be extended with respect to type acceptance of equipment for both 12.5 kHz channelization and 7.5/6.25 kHz channelization, in order to provide for an orderly transition to narrowband equipment led by type-acceptance manufacturing limitations. This is true not only from the perspective of the manufacturers; it is also manifest from the expressed concerns of the user community.

3. It has been apparent since at least 1986, if not before, that the Commission was going to have to develop a transition plan for the conversion of the PLMR bands below 800 MHz to more spectrum-efficient technologies. The recognition of the need to create a regulatory incentive for such conversion has been in the offing since at least as long ago as 1986, when the Commission issued its Report and Order in Docket 84-902, FCC 85-641, released January 22, 1986. There, the Commission stated that it would no longer resolve spectrum congestion problems by allocation of additional spectrum to the PLMR services, but rather would require the implementation of more efficient technologies. However, implementation of regulatory incentives has been slow in coming, and the market for and development of very narrow bandwidth (VNB)

and 12.5 kHz equipment has not progressed with any rapidity to date. Part of the reason for this delay has been the Commission's historical willingness to make available additional spectrum for the PLMR services. This has served as a disincentive to the user community to adopt narrowband technologies.<sup>2</sup>

4. Other reasons for the delay in conversion, however, have been the technical problems and interoperability problems inevitably inherent in the conversion, especially with respect to the public safety user community, which suffers routinely from serious budgetary restrictions and purchasing timetables. The phasing-in of narrowband equipment requires a sufficient time period for each phase of the conversion to stabilize.<sup>3</sup> A third

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<sup>2</sup> In 1985, the Commission authorized the use of narrowband technologies in the 150 MHz land mobile band. Commissioner Quello stated at that time that, after a lengthy transition period, there should be required an orderly conversion to narrowband technologies as a means of avoiding a crisis in spectrum congestion in the PLMR bands. See Narrowband Technologies, 57 RR 2d 1439, at 1449 (Commissioner Quello Concurring). That prescient view, however, was not adopted by the Commission until now. Commissioner Quello's understanding of the need for a reasonably lengthy transition time, however, remains.

<sup>3</sup> The Commission has always maintained that conversion to more spectrum efficient, and especially narrowband modes in the land mobile services requires a reasonable conversion period. In Docket 87-14, in which the Commission allocated two MHz at 220-222 MHz for the development of narrowband land mobile technology, the Commission stated:

We believe that spectrum efficient technologies will be essential in addressing the country's future land mobile requirements. Of course, narrowband technology is not the only spectrum efficient technology that might be applied to land mobile needs. However, we note that it has the potential of greatly improving spectrum efficiency. We are convinced that for narrowband land mobile technology to flourish, it must be afforded a reasonable opportunity to gain full acceptance in the marketplace.

reason for the delay, assuming that a two-step phasing-in of narrowband technologies is to be utilized (as was proposed in the Notice in this proceeding and as adopted in the Report and Order), is that there should be a sufficient time period for development, manufacturing, deployment and utilization of the first-phase hardware by users. It is not sufficient to merely permit multimode equipment; it is necessary to allow sufficient adjustment periods for each of the two narrowband phases, given the lifetimes of the equipment that currently exists.<sup>4</sup> The Commission's timetable of ten

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See, the Report and Order, 3 FCC Rcd. 5289 (1988).

<sup>4</sup> The Report and Order acknowledges the timing of the transition period to be the crux of the entire refarming concept. The Report states that:

An essential element of the channelization plan is the transition period in which it must be implemented. Rather than issuing a comprehensive set of dates mandating strict manufacturing and licensing requirements, the Commission will manage the transition to more spectrum efficient use of the PLMR frequency bands through the type acceptance process. This transition plan does not require current licensees to purchase new equipment. Instead, future equipment must meet increasingly efficient standards over the next ten years.

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This transition plan provides users immediate flexibility in equipment decisions and provides a period for the development of new technologies. It allows each licensee the freedom to choose equipment and a transition schedule that best fulfills their needs while balancing technical capabilities and financial considerations. As systems wear out, and new radios are bought, users will have a natural inducement, without a Government mandate, to use the narrower bandwidth of the multi-mode radios in order to avoid excessive adjacent channel interference. This will allow a natural transition to more efficient systems as new equipment is bought within each users' normal replacement cycle.

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years total for type acceptance limitations is simply not sufficient to accommodate a two-step narrowband conversion process. Finally, as stated over and over again in the comments in this proceeding, the VNB technology is not, currently, sufficiently robust to support a fixed timetable, especially not a ten-year timetable, as set forth in the Report and Order. If the VNB conversion is to occur, it must be allowed to do so over a reasonable period of time, while the industry utilizes the 12.5 kHz equipment to be made available in the short term.

## **II. "Graceful" Conversion To 12.5 kHz Narrowband Equipment Is Necessary To Preclude Disruption In the Private Wireless Services**

5. In the Notice of Proposed Rule Making in this proceeding, issued in 1992, the Commission proposed to require users to reduce bandwidth to 12.5 kHz channels<sup>5</sup> by January 1, 1996 (something more

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The Commission's type acceptance rules provide some flexibility by which manufacturers can continue to support their existing equipment through upgrades and modifications. Wideband equipment can continue to be produced, but these radios must include a multi-mode feature. With respect to this rule part and proceeding, a grant of type acceptance will be required for new multi-mode, or narrowband equipment. The new grant of type acceptance may cover a new transmitter design and/or upgraded units.

Report and Order, 60 Fed. Reg. at 37152.

The joint parties do not except to any of these goals and conclusions; the timetable for the conversion, however, is unreasonably short in order for the manufacturers to accommodate the conversion. The "natural transition" envisioned by the Commission is never going to occur if the timetables for the conversion are artificially truncated.

<sup>5</sup> Actually, the conversion was to be the reduction of occupied bandwidth by reduction of deviation, to not more than 10 kHz, by that date.

than two years after the date of the Notice of Proposed Rule Making) based on the assumption that all that was required was the reduction in deviation of existing FM equipment. That was shown in the comments not to be a correct assumption, but even based on that assumption, given the fact that the Notice was issued in November of 1992, the conversion to 12.5 kHz bandwidth was given a two-year timetable. It was not, of course, anticipated that this proceeding would not be resolved until midyear 1995. Nonetheless, the transition date for type-acceptance requiring narrowband efficiency standards for 12.5 kHz channels contained in the Report and Order is now August 1, 1996, a mere seven months later than originally envisioned in the Notice. This date is only one year from the approximate effective date of the Report and Order, and it is wholly insufficient to accommodate design, parts acquisition, manufacturing and marketing schedules for true 12.5 kHz equipment. From the point of view of the manufacturer, which must bear the entire burden of implementing this conversion (rather than the PLMR users which have no regulatory incentive to purchase this new equipment sooner than the end of the effective life of existing 25 kHz equipment), it is a significant disaccommodation. Design and production cycles for new equipment are considerably longer than one year; even the two years which would have been available to the manufacturers under the original Notice would have required almost impossible acceleration of normal manufacturer's schedules. It is strongly urged that additional time to design, manufacture and market true 12.5 kHz equipment, beyond the two years which would

have been available to manufacturers under the Notice, be made available now. The transition date by which new type accepted equipment must be designed to operate on channels of 12.5 kHz or less (or on 25 kHz channels if the narrowband efficiency standard is met) should be extended to August 18, 1998.

6. The rigorous timetable for the 12.5 kHz channelization type acceptance requirement is unnecessarily short in terms of the utilization timetable for PLMR licensees. As stated earlier this year by the Private Radio User Association:

The private land mobile bands at 150-174 MHz and 421-512 MHz currently support approximately 12 million base, mobile and portable transmitters. This represents an aggregate embedded equipment investment by users of over \$25 billion. Further, most private land mobile users place an extremely high priority on maintaining communications capability, and some users operate under severe budgetary constraints. Therefore, users rarely changeout an entire system at once. Accordingly, any refarming migration plan must adequately provide for the graceful transition and amortization of embedded systems as well as a sufficient planning cycle to implement new technologies.

It is imperative that the Commission factor realistic equipment replacement cycles into the transition plan implemented in this proceeding. In the context of the Private Land Mobile Radio Services, the participating user associations believe that a graceful transition plan must allow licensees to amortize their embedded equipment over a minimum of ten to fifteen years. Accordingly... the plan developed by this group is premised on two distinct sets of technical requirements, one extending from 1997 to approximately 2011 and the other extending roughly from 2011 to 2021.

User Association Comments, at 5,6.

The User Association proposal would allow two years for conversion to 12.5 kHz equipment from the effective date of the Report and Order in this proceeding. After that date, all equipment would have

to be capable of operation on 12.5 kHz channels. Then, by 2011 (16 years after the effective date of the Report and Order), all newly type-accepted equipment would have to be capable of operation on 6.25 kHz or narrower channels. Ten years later, all equipment sold would have to be capable of operation on 6.25 kHz or narrower channels. This timetable, from the perspective of the manufacturers, is far more reasonable than that in the Report and Order, though the timetable for conversion to 12.5 kHz equipment (or dual-mode 12.5/25 kHz equipment) in the User Group comments is still considerably short, in terms of design, parts acquisition, manufacturing, type acceptance and marketing timetables. One year is virtually impossible; two is, practically speaking, extremely difficult; three years would be somewhat more reasonable, though still short of the timing of normal design and manufacturing cycles. The Commission has underestimated this factor considerably.

7. The comments of the Land Mobile Communications Council in this proceeding, in one<sup>6</sup> of two alternative comprehensive transition plans, included a proposed requirement for limitation of acceptance of applications for type acceptance for equipment capable of operation on 12.5 kHz channels by January 1, 1996. The timetable for conversion to 12.5 kHz channelization, and the phaseout of type acceptance grants for equipment not capable of 12.5 kHz channelization operation was supported by a number of

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<sup>6</sup> The LMCC Plan A received overwhelming support in the comments in this proceeding, and surely formed the basis for the Report and Order transition plan. Plan B, which involved a direct transition from 25 kHz channelization to 6.25 kHz, was soundly rejected by the industry.

commenters, including Motorola, Utilities Telecommunications Council, and many other manufacturers and users. This, however, was a proposal which was first considered and commented upon early in 1993, and the assumption was that something more than two years would be available for manufacturers to design, manufacture and market 12.5 kHz equipment. No comments supported a one-year sunset for type acceptance of equipment capable only of bandwidths in excess of 12.5 kHz., and the Commission's delay in resolution of this proceeding did not result in any appreciable change in the timetables for conversion to 12.5 kHz channel spacing. The reply comments of Telecommunications Industry Association (TIA) were quite direct in noting that the conversion to 12.5 kHz is not the simple matter of screwdriver adjustment to the transmitter of current 25 kHz PLMR equipment. Nor would such address the adjacent-channel interference problem of the receiver bandwidth.<sup>7</sup> Conversion to "true" 12.5 kHz equipment is not a transitory matter, as the Report and Order timetable would indicate. If it is to work, there must be a sufficient time for the development of "true" 12.5 kHz equipment.<sup>8</sup> The Joint Parties are dedicated to the immediate

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<sup>7</sup> The Notice in this proceeding simply stated that there would be, at the time of the conversion to 10 kHz occupied bandwidth by deviation reduction, no protection from adjacent channel transmitters was available, and reduction of receiver bandwidth should be accomplished by users.

<sup>8</sup> This was noted by APCO Project 25, the new technology standards project, which concluded in June of this year that a complete, public-safety compatible APCO Project 25 narrowband, 12.5 kHz system before 1998. An extremely important element of the development of new 12.5 kHz equipment is the establishment of standards to accommodate it.

development of product lines of such equipment, but they require a reasonable time for the development of products to address the first phase of narrowband conversion.

8. The Report and Order, if it is to seriously encourage the use of true 12.5 kHz equipment, should have permitted a significant time period for delivery of such equipment to the marketplace, and it must, as well, permit a sufficiently long time for such equipment to be amortized and used by PLMR licensees. As the Commission has provided an artificially short period for conversion to the 7.5/6.25 kHz bandwidths, it is impossible to conceive of any market whatsoever for upcoming 12.5 kHz equipment; the obsolescence of such is inherent in the Report and Order itself, and constitutes a significant regulatory disincentive to users to convert from 25 kHz systems to 12.5 kHz equipment.

### **III. The Timetable for Conversion to 7.5/6.25 kHz Equipment Is Completely Unworkable**

9. The record in this proceeding is replete with comments notifying the Commission that the conversion to 7.5/6.25 kHz equipment is premature, and that the technology does not support such an aggressive timetable. As recently as June 1, 1995, for example, APCO Project 25 submitted a letter notifying the Commission of the severe harm to a successful narrowband transition which would be the result of an accelerated timetable for VNB conversion:

In August of 1995, the APCO Project 25 Steering Committee is scheduled to adopt Phase 1 of APCO Project 25, a complete suite of 12.5 kHz digital, narrowband 12.5 kHz standards. Five manufacturers...have also agreed to

produce APCO Project 25-compliant Phase 1 radio equipment. In October of 1995, we are scheduled to start APCO Project 25, Phase II. This phase will focus on very narrow band, 6.25 kHz or equivalent standards. However, that effort and the work we are now completing could be seriously jeopardized by the...accelerated path to 6.25 kHz technology...

(APCO Project 25 Letter, June 1, 1995 to Chairman Hundt)

The result of the Commission's timetable for conversion from 12.5 kHz to VNB technology will be, as APCO Project 25 puts it, a "never-ending process of public safety agencies having to replace entire systems, all at once with proprietary, sole-source products that will virtually destroy any opportunity for true inter-agency interoperability." The Joint Parties agree with this assessment, and suggest that, especially with respect to VNB technology, now not fully developed, a period of standards setting and stability of the 12.5 kHz technology should be reasonably lengthy, on the order of the life of at least one generation of true 12.5 kHz equipment (on the order of 15-20 years)<sup>9</sup> before any sunset for type acceptance of that equipment, and conversion to VNB channelization is required.

10. APCO had suggested that a minimum of 10 years from the effective date of the Report and Order would be necessary to migrate from the current 25 kHz analog systems to 12.5 kHz systems. The Joint Parties suggest that assessment is overly optimistic, and that elimination of type acceptance for 12.5 kHz equipment after

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<sup>9</sup> According to APCO, the life of a public-safety radio system is 15-20 years.

only ten years from the effective date of the Report and Order will cause significant disruption in the marketplace.

11. This is especially true given the essentially unproven nature of VNB equipment at the present time, and the fact that it is incompatible with FM technology. The Commission has acknowledged this, and has provided spectrum for the development of new narrowband technology. Indeed, the entire premise of the Docket 87-14 allocation, and of the service rules adopted in the PR Docket 89-552 proceeding, was to permit a marketplace opportunity for narrowband systems to become licensed, and for a marketplace standard to develop and become accepted. The goal was for these narrowband systems to develop at 220-222 MHz, and thereafter to become integrated into the other land mobile allocations below 512 MHz. There has been no opportunity for this to occur, however, because there have been, until very recently, no licenses granted in the band, on either local or nationwide channels, and no significant amount of construction of facilities.<sup>10</sup> The result is that there is no current standard for VNB PLMR equipment, either digital or analog. Because there is not an established and proven

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<sup>10</sup> In its decision allocating the 220-222 MHz band for use by the Private Land Mobile Radio Services, the Commission made it clear that the band was to provide a "nursery" for the development of narrowband technologies and for their possible deployment in other bands. Amendment of Part 90 of the Commission's Rules to Provide for the Use of the 220-222 MHz Band by the Private Land Mobile Radio Services, 6 FCC Rcd. 2356, 2358 (1991), recon. 7 FCC Rcd. 4484 (1992). The Commission's lottery award of licenses in that band was delayed by litigation, and the licensees have not met all construction deadlines. Implementation of Section s 3(n) and 332 of the Communications Act (Third Report and Order), FCC 94-212 (September 23, 1994).

narrowband technology readily available to replace current 25 or 12.5 kHz systems; because the Commission has specifically allocated spectrum for the development of such equipment and for the acceptance thereof in the marketplace; and because there will be no compatibility between the current system (either pseudo-12.5 kHz systems or true 12.5 kHz systems) and new VNB systems in terms of equipment, any fixed timetable, especially one premised on elimination of 12.5 kHz bandwidth equipment type acceptance after only 10 years, is premature at this time.

12. Thus, the Joint Parties request that the Commission modify its Report and Order to provide the "first stage" of the conversion to 12.5 kHz systems should occur in August of 1998, rather than August of 1996. This will itself result in significant spectrum efficiency increases. Any further action limiting type acceptance of that equipment, thus compelling the obsolescence of 12.5 kHz systems, however, should be postponed, at least for one generation of 12.5 kHz equipment, or for such longer time as the industry agrees upon a single (or, if multiple, then compatible) VNB technology that satisfies spectrum efficiency requirements and at the same time the needs of the PLMR users.<sup>11</sup> To proceed now with

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<sup>11</sup> See, Comparison of Selected Narrowband Modulation Systems, NTIA-OSM, dated October 30, 1987 for CCIR Study Group 1 (1986-1990), at 3,4:

In recent years, the application of digital technology to mobile communications has become more common. Digital modulation types with advantages for narrowband use are either multilevel or premodulation filter continuous phase (GMSK, Tamed FM)...The use of coding to compress the voice bandwidth improves the possibility of using

a fixed timetable shorter than one generation of 12.5 kHz equipment for type acceptance of systems narrower than 12.5 kHz will inevitably result in unnecessary confusion among users. It will also create intra-service compatibility problems (which will frustrate interoperability in the Public Safety Services).

13. A more economical and efficient plan for true VNB channelization is to determine an acceptable, or several compatible formats, rather than forcing manufacturers to implement several potentially incompatible techniques on a wholesale basis just to meet an artificially-imposed timetable. The use of the 220-222 MHz allocation for this purpose is exactly the intention of the Commission in making that band available. A reasonable period for the development of standardized technology there (rather than arbitrarily placing a sunset on type acceptance of 12.5 kHz equipment, only nine years after it is implemented), would promote uniformity in the other PLMR bands below 512 MHz at an acceptable transition time, which the Joint Parties agree should not be less than 15-20 years.

14. Indeed, a number of commenters in this proceeding counseled against any mandated conversion to VNB equipment. As Motorola stated in reply comments in this proceeding:

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digital modulation in narrowband channels. For example, compressed voice at 2400 bps may be combined with GMSK modulation and supported in a 5 kHz channel...

These types of new technologies require some development and acceptance before implementation of channelization schemes narrower than 12.5 kHz are decided upon and mandated by the Commission.

Understanding that change is unavoidable, users are merely asking that they be given enough time to amortize and utilize existing radios before being required to retire such equipment. Equally important, however, users are concerned about committing to the deployment of very narrowband equipment before such equipment has proven itself proficient in the real, congested spectrum world of private land mobile radio. To this end, most users are accepting the need for a reduction in spectrum occupancy to 12.5 kHz channels to be implemented over the next ten years. This reduction would be accomplished primarily through the purchase of new 12.5 kHz capable products rather than the costly modification of current equipment. In addition, most users are suggesting that a future FCC rulemaking should be initiated by the end of this decade to once again explore the need for, and possibility of, further bandwidth reductions.

(Motorola Reply Comments, at 3)

Comments in the proceeding were almost unanimous in opposing a mandatory conversion (and type-acceptance sunsets are no less a mandatory conversion than are user conversion timetables; only the burden is shifted to the manufacturer) to unproven, untested technologies in a congested radio environment, especially on an accelerated timetable. For example, E.F. Johnson suggested in comments filed in May of 1993, premised on the Land Mobile Communications Council recommendations, that full implementation of the VNB channelization should not be required until January 1, 2014. The U.S. Telephone Association, recognizing the tremendous industry costs in conversion over a short period to narrowband technology, stated:

On balance then, the Commission must reconsider the net benefit of its proposed overall transition plan. One comment places the total cost of compliance for licensees at over \$25 billion (citation omitted). To the extent the Commission can act to reduce that expense through consideration of less drastic alternatives, it should do so. Additional time is one of a number of options that

can be combined to reduce the financial burden on licensees.

(U.S. Telephone Association comments, at 8,9)

The Land Mobile Communications Council (LMCC) Option A transition plan, which received significant support in comments, provided no timetable for type acceptance sunsets for 12.5 kHz equipment at VHF high band frequencies. Instead, it proposed a further rule making in 1999 (assuming an effective date of the Report and Order of January 1, 1994, which did not occur), to determine whether the state of VNB technology would be sufficient to sustain a conversion to VNB channelization by January 1, 2014. These timetables are eminently reasonable by manufacturing standards. The accelerated timetables in the Report and Order are not.

15. Just as there is a need for additional time to design, acquire parts for, manufacture, type accept and market 12.5 kHz equipment to support implementation of true 12.5 kHz systems beyond the one year that the Commission has provided in the Report and Order, there is a need to allow that equipment to be used, and for the systems purchased to be adequately amortized before placing a sunset limitation on type acceptance of those systems, thus forcing a conversion to unproven VNB technology. If the manufacturers are to have to bear the brunt of the mandatory conversion to narrowband technology, the Commission, having established a two-step transition, is obligated: 1) to allow the first stage conversion to succeed in the marketplace; 2) to allow the 12.5 kHz equipment to be fully used and amortized for at least one generation before

creating the obsolescence of that interim technology by making new equipment unavailable. There is also the more obvious need to allow time for standards to develop and for equipment to be developed for the VNB conversion. It would be premature to specify January 1, 2005, nine years hence, as a specific date to prohibit type acceptance of new 12.5 kHz equipment. The timetable should be considerably extended, to, for example, 2014 for phaseout of all 12.5 kHz equipment type acceptance.<sup>12</sup>

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<sup>12</sup> Indeed, there is evidence that the Commission has ignored significant technical issues raised in the comments which, if taken into account, severely complicate the idea of a fixed timetable for conversion to VNB channelization. As Motorola stated in its July, 1993 reply comments in this proceeding:

The panacea envisioned by some proponents of VNB equipment ignores the fact that the private land mobile frequency bands are the most heavily occupied portion of the spectrum. As APCO observes, 'there is [already] a current severe problem with both intermodulation and desensitization, particularly in the 150 to 160 MHz band' (footnote omitted). Of course... 'any proposed reduction in channel spacing is expected to exacerbate interference problems.

First, commenters have noted that increasing the number of transmitters in a given amount of spectrum will increase the potential intermodulation interference. (footnote omitted). For example, TIA observes:

[B]y changing the channelization from 25 kHz to 5 kHz increments, the number of channels increase by a factor of 5. But, the number of potential intermodulation interferences per megahertz is increased by a factor of 23.4 for two signal, third-order intermodulation, and by a factor of 133 for 3 signal, third-order intermodulation interference signals.

Even worse, as APCO notes, as these intermodulation problems increase, the technical solutions available to combat intermodulation interference decrease in utility: 'combining devices, cavities and crystal filters are essentially wide band and will not be effective in

#### IV. Conclusions

16. The Commission has embarked by the Report and Order on a proper track to implement narrowband channelization and increase spectrum efficiency in the PLMR bands. It has, however, accelerated the pace of that track to the point that the plan is unworkable, from the point of view of those, such as the Joint Parties, who are to bear the burden of implementing the narrowband technologies. The Commission has provided but one year to sunset type acceptance of all but 12.5 kHz systems. The most aggressive track suggested in the Notice in this proceeding, however, would have provided a two-

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providing adequate protection at the proposed channel spacing.'

Second, commenters indicate that receiver desensitization may become a significant factor if VNB technology is deployed widely throughout the congested PLMR bands. As Orange County correctly notes:

Desensitization occurs when there is a transmitter in the immediate proximity to a receiver, and is inversely proportional to its frequency separation. Such interference will be especially prevalent when in a transition period requiring the use of reduced deviation and standard receivers (those used with 5 kHz deviation. (footnote omitted)

Finally, manufacturers of VNB equipment noted the difficulties of sharing spectrum with wider bandwidth systems which will surely be the case during any transition period. SEA, for example, notes that in a shared radio environment 'there is an operational requirement to utilize interoperable equipment so a clear channel can be monitored.'...

Motorola reply comments, at 15-17.

In addition to the foregoing, the Joint Parties would note the additional harmful effect of impulse ambient noise on VNB receivers and other noise which would affect such receivers.

year period for conversion, and the comments throughout the proceeding called for the same. As other manufacturers and user groups have noted, there must be time to design, develop, secure parts, manufacture, type accept and bring to the marketplace true 12.5 kHz systems, not merely "pseudo- 12.5 kHz" equipment. The alternative is to seriously disrupt the existing, heavily-loaded PLMR bands, including the public safety bands. To insure a graceful transition, the first necessary modification of the Report and Order is to provide a three-year type acceptance limitation for equipment greater than 12.5 kHz, so as to allow 12.5 kHz equipment to actually reach the marketplace.

17. Second, and more importantly, the 12.5 kHz equipment should be permitted to be type accepted during at least one generation of the systems, which have a practical lifetime of between 15-20 years. The Commission has, by the Report and Order, created the sunset for type acceptance only nine years from the present time; far too short a period to abandon entire technologies and develop new standards, design, acquire parts, manufacture, and type accept entirely new, unproven technology. The timetable for the type acceptance sunset for 12.5 kHz equipment was arbitrarily established, and fails to account for the previously adopted plan, dating back to 1987, to permit the use of the 220-222 MHz band for the development of standards and systems for VNB equipment. For various reasons, that testing ground has not yet fulfilled its purpose, and the nine-year deadline for 12.5 kHz equipment type acceptance presupposes events during that time which are not

predictable. The LMCC proposal to conduct further rulemaking during 1999 to evaluate the wisdom of a schedule for the second phase of conversion was indeed a good plan. Nonetheless, if the Commission is intent upon establishing a firm timetable for the sunset of 12.5 kHz type acceptance (which the Joint Parties understand may be necessary in order to establish the firm intention of the Commission to implement narrowband technology in the PLMR services), it should not be January 1, 2005, but closer to 2014, in order for the VNB technology to stabilize, for standards to be established, and for competitive products to be brought to the market by equipment manufacturers. Such a timetable will insure competition in equipment availability, the interoperability that is so critical to the public safety radio services, and reasonable pricing. It will also insure what has been in this proceeding referred to as a "graceful" transition from wideband channelization to 12.5 kHz, and, at the proper time, 7.5 and 6.25 kHz channelization.

Accordingly, the Joint Parties hereby respectfully request that the Commission reconsider and revise the timetable for limiting type acceptance of new PLMR equipment, so that the date after which only 12.5 kHz (or efficiency equivalent) equipment may be type accepted be changed from August 1, 1996 to August 1, 1998, and the date after which only 7.5/6.25 kHz (or efficiency

equivalent) equipment may be type accepted be changed from January 1, 2005 to January 1, 2014.

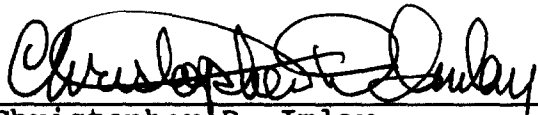
Respectfully submitted,

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By:

  
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